



450 Montbrook Lane
Knoxville, TN 37919
(865) 691-5052
(865) 691-6485 FAX
(865) 691-9835 ACCT. FAX

US EPA RECORDS CENTER REGION 5



467837

June 6, 2001

Terese VanDonsel
Remedial Project Manager
United States Environmental Protection Agency
77 West Jackson Blvd.
Chicago, Illinois 60604-3590

**Subject: Fields Brook Superfund Site
DNAPL Outlines - Floodplain/Wetland Areas**

Dear Ms. VanDonsel:

This letter serves as a follow up to my April 23, 2001 in which I discussed the proposed excavation standards for the DNAPL at the Fields Brook Superfund Site. As you are aware, Dense Non Aqueous Phase Liquid (DNAPL) was discovered during brook excavation activities in the late fall of 2000 in Exposure Unit (EU) 8. Several phases of subsequent delineations have been completed to define the extent of the DNAPL and DNAPL impacted soils. We have narrowed the limits of the problem and we are now in a position to confirm this definition and remediate the DNAPL contamination.

Risk Characterization

Excavation of DNAPL along lines and grades established by previous and proposed sampling will remove the DNAPL from the area. However, residual DNAPL impacted soils will remain. Consistent with the 1997 ROD for floodplain soils, a risk characterization was performed utilizing the data obtained to date (Attachment A). The Risk Characterization indicates no unacceptable risks from the residual soils.

Remediation activities

The final delineation will be completed by additional sampling, conducted via Geoprobe. The locations will be positioned outside of the preliminary cut lines, indicated on the drawing (Attachment B), to confirm or modify the excavation with a high degree of confidence. These cut lines will be determined consistent with the visual observation of DNAPL. Based upon the data collected and previous data, FBAG will continue the excavation along the final lines and grades as delineated on the final drawing. These lines and grades will be consistent with the requirements of the ROD and ESD. Despite establishing cut lines at the outset, FBAG will continue excavations based on any additional observation of DNAPL during remediation.

Should you have any questions regarding this report, do not hesitate to contact me at (865) 691-5052.

Sincerely,
de maximis, inc.

Robert W. Rule
Alternate Project Coordinator

RWR/mw

Allentown, PA • Clinton, NJ • Greensboro, GA • Knoxville, TN • San Diego, CA
Sarasota, FL • Houston, TX • Windsor, CT • Waltham, MA



Terese Van Donsel

June 6, 2001

Page 2

Enclosures

cc: Fields Brook Action Group—Project Management Committee
Tony Wolfskill
Terri Bowers

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Attachment A

Fields Brook Floodplain DNAPL-Impacted Soils Risk Characterization

Gradient Corporation

June 6, 2001

1 Introduction

The purpose of this report is to compare the concentrations of chemicals found in the DNAPL-impacted soils in the Fields Brook floodplain with cleanup goals (CUGs) for surface soils specified in the 1997 Record of Decision (ROD) in order to assess risk of the chemicals to human health.

2 Summary of chemical concentrations

Tables 1 and 2 summarize chemical concentrations for Exposure Units (EUs) 6 and 8. Both EUs are in the occupational area of Fields Brook. CUGs are those specified in the 1997 ROD for occupational use. The third column in the tables gives the number of samples (N). The following column gives the 95% upper confidence limit on the arithmetic mean concentration (UCL). This is the measure of concentration required by EPA (1992) for purposes of assessing chronic exposure. Where the UCL is estimated to be higher than the maximum detected, the maximum detected value is substituted. The next column shows those chemicals in each EU for which the UCL exceeds the CUG, and the final column shows the factor by which the UCL exceeds the CUG.

2.1 EU6

Table 1 shows that the tetrachloroethene UCL exceeds the CUG by a factor of 5.0. The UCL for all other chemicals is below the CUG.

2.2 EU8

Table 2 shows that the tetrachloroethene UCL exceeds the CUG by a factor of 1.4. The UCL for all other chemicals is below the CUG.

3 Risk Characterization

The 1997 ROD CUGs for surface floodplain soils were derived to be consistent with a 10^{-6} target cancer risk or a noncancer target hazard quotient of 1, and included soil ingestion and dermal contact exposure pathways. The EPA assumed in the occupational areas that an individual would contact the soil on 60 days of the year for 25 years, and ingest 50 mg of soil on each of these occasions. Typically, a risk assessment for exposure to deep soils would consider a lower frequency of contact.

Comparison of the chemical concentrations found in the Fields Brook floodplain DNAPL-impacted soils with the ROD CUGs suggests a cancer risk on the order of 1.4×10^{-6} to 5×10^{-6} for current tetrachloroethene concentrations. This represents an overestimate of actual risks because the DNAPL-impacted soils are not on the surface. The actual cleanup levels described in the EPA's 1996 Proposed Plan for PCBs and hexachlorobenzene in the surface soils of the occupational EUs correspond to a 3×10^{-6} risk. These risks are within EPA's acceptable risk range of 10^{-6} to 10^{-4} . This consideration, coupled with the decreased probability of contact with deep soils relative to the surface soils, leads to a conclusion that the level of human health risk associated with tetrachloroethene in the DNAPL-impacted soils is acceptable.

Excavation for DNAPL removal will include removal of a large portion of the DNAPL-impacted soils, thus further reducing risks estimated here.

References

- U.S. EPA. 1992. Supplemental Guidance to RAGS: Calculating the Concentration Term. Office of Solid Waste and Emergency Response. Pub. 9285.7-081. May.
- U.S. EPA. 1996. Proposed Plan for Remedial Action Fields Brook Superfund Site Floodplain/Wetland Area. November.
- U.S. EPA. 1997. EPA Superfund Record of Decision: Fields Brook Site, OU4, Ashtabula, OH. EPA/541/R-97/116. January.

Table 1. EU6: Comparison of concentrations with CUGs for surface soils

	CUG, mg/kg	N	UCL, mg/kg	UCL > CUG?	UCL/CUG
bis(2-ethylhexyl)phthalate	349	42	0.214		
chlorobenzene	140,000	39	6.1 ⁽¹⁾		
chloroform	3274	42	ND(81) ⁽²⁾		
1,2-dichlorobenzene	390,000	42	1.05		
1,1-dichloroethene	33.3	42	5.9 ⁽¹⁾		
hexachlorobenzene	6.7	42	3.36		
hexachlorobutadiene	155	42	8.25		
hexachloroethane	865	42	13.7		
methylene chloride	2654	42	ND(400) ⁽²⁾		
1,1,2,2-tetrachloroethane	93.4	42	85.7		
tetrachloroethene	419	42	2100 ⁽¹⁾	yes	5.0
1,2-transdichloroethene	140,000	42	15.7		
1,2,4-trichlorobenzene	40,000	42	0.227		
1,1,2-trichloroethane	338	42	6.4 ⁽¹⁾		
trichloroethene	2126	42	1700 ⁽¹⁾		
vinyl chloride	10.5	42	1.5 ⁽¹⁾		

(1) Maximum detected value.

(2) ND = nondetected values. The highest detection limit is shown in parentheses.

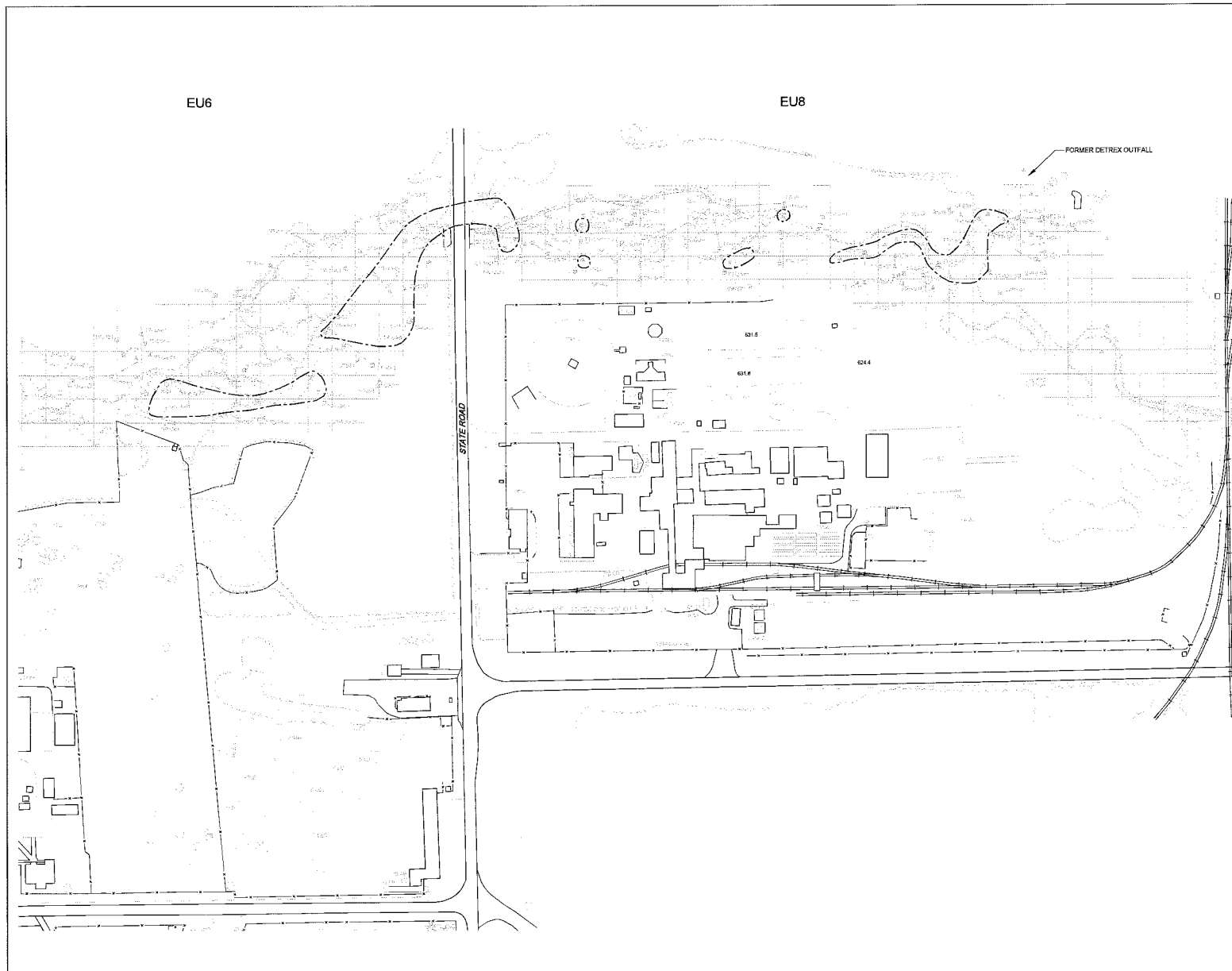
Table 2. EU8: Comparison of concentrations with CUGs for surface soils

	CUG, mg/kg	N	UCL, mg/kg	UCL > CUG?	UCL/CUG
bis(2-ethylhexyl)phthalate	349	31	0.344		
chlorobenzene	140,000	21	0.26 ⁽¹⁾		
chloroform	3274	31	ND(110) ⁽²⁾		
1,2-dichlorobenzene	390,000	31	0.157		
1,1-dichloroethene	33.3	31	0.63 ⁽¹⁾		
hexachlorobenzene	6.7	31	4.50		
hexachlorobutadiene	155	31	8.48		
hexachloroethane	865	31	8.90		
methylene chloride	2654	31	ND(570) ⁽²⁾		
1,1,2,2-tetrachloroethane	93.4	31	10.9		
tetrachloroethene	419	31	602	yes	1.4
1,2-transdichloroethene	140,000	31	0.23 ⁽¹⁾		
1,2,4-trichlorobenzene	40,000	31	ND(4.9) ⁽²⁾		
1,1,2-trichloroethane	338	31	2.1 ⁽¹⁾		
trichloroethene	2126	31	1250		
vinyl chloride	10.5	31	0.17 ⁽¹⁾		

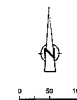
(1) Maximum detected value.

(2) ND = nondetected values. The highest detection limit is shown in parentheses.

Attachment B



NO.	Revision	Date	Initial



LEGEND

- FIELDS BROOK
- APPROXIMATE LOCATION OF PRELIMINARY TEST PIT LOCATION (PHASE I INVESTIGATION)
- SURVEYED TEST PIT LOCATION (PHASE I INVESTIGATION)
- SURVEYED TEST TRENCH LOCATION (PHASE II INVESTIGATION)
- SURVEYED RESPONSE LOCATION (PHASE II INVESTIGATION)
- APPROXIMATE LIMIT OF LIQUID DNAPL

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.



Approved

DRAWING STATUS

Status	Date	Initial



CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BECHTEL ASSOCIATES PROFESSIONAL CORPORATION - OHIO

Project Manager: IKR	Reviewed By: JD	Date: JUNE 2001	
Scale: 1"=100'	Project No: 11676-10	Report No: PRES009	Drawing No: figure

11676-10/PRES009/00-00-001 JUN 2001